

AMENDMENTS TO THE CLAIMS

This listing of the claims below will replace all prior versions and listing of claims in this application.

1. **(Currently Amended)** A therapeutic method for a heart disease associated with decreased expression of an AOP-1 gene or AOP-1, comprising administering by direct injection an expression vector comprising a nucleic acid and a promoter operatively linked to the nucleic acid of the expression vector to heart cells of an individual, wherein said nucleic acid enhances the production of AOP-1 and is[: (1)] a nucleic acid encoding AOP-1~~;~~ or (2) ~~a nucleic acid having a sequence identity of 90% or more to a nucleic acid encoding AOP-1 and encodes a polypeptide that retains the function of AOP-1.~~

Claims 2-6 (Canceled)

7. **(Currently Amended)** The therapeutic method of claim 1, wherein the heart disease associated with decreased expression of an AOP-1 gene or AOP-1 comprises chronic heart failure, ischemic heart failure, or ischemic heart disease.

Claims 8-14 (Canceled)

15. **(Withdrawn)** A diagnostic method for a disease associated with decreased expression of AOP-1 gene or AOP-1, comprising determining the expression level of AOP-1 gene or the production level of AOP-1 to make a diagnosis based on the expression level or production level.
16. **(Withdrawn)** The diagnostic method of claim 15, wherein the disease associated with decreased expression of AOP-1 gene or AOP-1 comprises chronic heart failure, ischemic heart failure, ischemic heart disease, rheumatoid arthritis, neurodegenerative disease, hepatic disease or renal failure.
17. **(Withdrawn)** A diagnostic agent or diagnostic kit for a disease associated with decreased expression of AOP-1 gene or AOP-1, comprising a means for determining the expression level of AOP-1 gene or the production level of AOP-1 as a measure.

18. **(Withdrawn)** The diagnostic agent or diagnostic kit of claim 17, wherein the disease associated with decreased expression of AOP-1 gene or AOP-1 comprises chronic heart failure, ischemic heart failure, ischemic heart disease, rheumatoid arthritis, neurodegenerative disease, hepatic disease or renal failure.
19. **(Withdrawn)** A non-human transgenic animal suitable for use as a pathologic model of a disease associated with decreased expression of AOP-1 gene or AOP-1 wherein the production of AOP-1 is suppressed or the expression of AOP-1 gene is suppressed or AOP-1 gene is deleted.
20. **(Withdrawn)** The non-human transgenic animal of claim 19, wherein the disease associated with decreased expression of AOP-1 gene or AOP-1 comprises chronic heart failure, ischemic heart failure, ischemic heart disease, rheumatoid arthritis, neurodegenerative disease, hepatic disease or renal failure.
21. **(Withdrawn)** A transformed tissue or transformed cell suitable for use as a tissue model or a cell model of a disease associated with decreased expression of AOP-1 gene or AOP-1 wherein the production of AOP-1 is suppressed or the expression of AOP-1 gene is suppressed or AOP-1 gene is deleted.
22. **(Withdrawn)** The transformed tissue or transformed cell of claim 21, wherein the disease associated with decreased expression of AOP-1 gene or AOP-1 comprises chronic heart failure, ischemic heart failure, ischemic heart disease, rheumatoid arthritis, neurodegenerative disease, hepatic disease or renal failure.
23. **(Withdrawn)** A method for screening a material enhancing the expression of AOP-1 gene, a material enhancing the production of AOP-1, a material enhancing the function of AOP-1, or a combination thereof, comprising administering or adding a synthesized or genetically engineered material or a natural material or a derivative thereof to the non-human transgenic animal or transformed tissue or transformed cell of claim 18 to detect the expression level of AOP-1 gene or the production level of AOP-1.

24. **(Withdrawn)** A method for screening a material enhancing the expression of AOP-1 gene, a material enhancing the production of AOP-1, a material enhancing the function of AOP-1, or a combination thereof, comprising contacting a synthesized or genetically engineered material or a natural material or a derivative thereof with (1) a transformed cell or an in vitro expression system having a transcriptional regulatory region of AOP-1 gene and AOP-1 gene or a reporter gene to detect the expression level of AOP-1 gene or the reporter gene or with (2) AOP-1 or a target molecule of AOP-1 to detect the amount of AOP-1 or the target molecule of AOP-1.
25. **(Withdrawn)** The screening method of claim 24, further comprising constructing an expression vector having a transcriptional regulatory region of AOP-1 gene linked upstream or downstream of the translation region of a reporter gene, then culturing a suitable host cell transfected with said vector, adding a synthesized or genetically engineered material or a natural material or a derivative thereof to the cultured cell and detecting changes in the expression level of the reporter gene or the production level of the reporter protein after a given period.
26. **(Withdrawn)** The screening method of claim 24, further comprising contacting a synthesized or genetically engineered material or a natural material or a derivative thereof with AOP-1 or a target molecule of AOP-1 to detect the amount of AOP-1 or the target molecule of AOP-1 bound or unbound to said material.
27. **(Withdrawn)** The screening method of claim 24, further comprising immobilizing AOP-1 or a target molecule of AOP-1 on a substrate and adding a synthesized or genetically engineered material or a natural material or a derivative thereof and AOP-1 or target molecule of AOP-1 to the immobilized AOP-1 or target molecule of AOP-1 to detect the amount of AOP-1 or the target molecule of AOP-1 bound or unbound.
28. **(Withdrawn)** The screening method of claim 24, further comprising immobilizing a synthesized or genetically engineered material or a natural material or a derivative thereof on a substrate and adding AOP-1 or a target molecule of AOP-1 to the immobilized material to detect the amount of AOP-1 or the target molecule of AOP-1 bound or unbound.
29. **(Withdrawn)** A method for screening a material enhancing the function of AOP-1, comprising

contacting a synthesized or genetically engineered material or a natural material or a derivative thereof with AOP-1 or a target molecule of AOP-1 to determine the antioxidant or peroxynitrite scavenging activity of AOP-1.

30. **(Withdrawn)** The screening method of claim 29, further comprising adding a synthesized or genetically engineered material or a natural material or a derivative thereof and AOP-1 or a target molecule of AOP-1 to AOP-1 or the target molecule of AOP-1 to determine the antioxidant or peroxynitrite scavenging activity of AOP-1.
31. **(Withdrawn)** The screening method of claim 29, further comprising immobilizing AOP-1 or a target molecule of AOP-1 on a substrate and adding a synthesized or genetically engineered material or a natural material or a derivative thereof and AOP-1 or the target molecule of AOP-1 to the immobilized AOP-1 or target molecule of AOP-1 to determine the antioxidant or peroxynitrite scavenging activity of AOP-1.
32. **(Withdrawn)** The screening method of claim 29, further comprising immobilizing a synthesized or genetically engineered material or a natural material or a derivative thereof on a substrate and adding AOP-1 or a target molecule of AOP-1 to the immobilized material to determine the antioxidant or peroxynitrite scavenging activity of AOP-1.
33. **(Previously Presented)** The method of claim 1, wherein said nucleic acid encoding AOP-1 is SEQ ID NO 1.
34. **(Previously Presented)** The method of claim 1, wherein said nucleic acid encoding AOP-1 is SEQ ID NO 2.
35. **(Previously Presented)** The method of claim 1, wherein said nucleic acid encoding AOP-1 is SEQ ID NO 3.

Claims 36-39 **(Canceled)**